

# Record of *Regalecus glesne* (Regalecidae) from the eastern Adriatic Sea

by

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**RÉSUMÉ.** - Nouveau signalement de *Regalecus glesne* (Regalecidae) en mer Adriatique orientale.

Le 11 mai 2009, un spécimen de *Regalecus glesne* Ascanius, 1772, a été capturé dans les environs de Stobrec, en Croatie. Ce poisson rare a été retrouvé vivant, nageant près de la côte. Ce signalement est le premier de cette espèce sur la côte est de l'Adriatique et le second pour l'ensemble de l'Adriatique. Le signalement précédent se réfère à un spécimen mutilé partiellement conservé, capturé en 1932.

**Key words.** - Regalecidae - *Regalecus glesne* - MED - Adriatic Sea - Oarfish - New record.

Oarfish is greatly elongated, pelagic lampridiform fish belonging to the family Regalecidae. It is a mesopelagic species also found at greater depths of about 1000 m and is distributed in most tropical and temperate seas (Bauchot, 1987). Although widely distributed, this fish is considered very rare in the whole area of distribution including Mediterranean. The fact that it inhabits greater depths and is therefore unavailable to most fishing gears probably adds to the perceived rarity of the species. Information about biology of oarfish are scarce and are mostly based on stranded or dying specimens (Schmitter-Soto, 2008).

On 11 May 2009, in the evening hours, a specimen of Oarfish, *Regalecus glesne*, was collected in the vicinity of Stobrec, Croatia (43°29'N; 16°31'E) (Fig. 1). The fish was alive, swimming at the depth of 1.30 m near the coast. The fact that the fish was disoriented facilitated its collection by hand by a local fisherman. Length and weight were obtained by the fishermen following our directions. The total length of fish was 194 cm, weight 815 g ( $W = 815$  g). The specimen was deposited in the ichthyological collection of the Institute of Oceanography and Fisheries in Split, catalogue number IOR-331. Unfortunately, due to inadequate handling, we received the fish considerably damaged and with the middle part of 44 cm in length missing, so that accurate measurements of the fish were impossible (Fig. 2). The head of the fish was severely damaged, but we were able to count the number of gill rakers on the first gill arch and it was  $6 + 35 = 41$ . The number of dorsal fin rays up to the anal opening was 107. Skin and fin coloration as well as few preserved occipital crest rays and elongated pelvic fins made determination of the species possible. The fish was covered with delicate silver guanine, which rubbed off at the slightest touch and therefore had lost much of its silvery coloration when we received it. In spite of this, characteristic greyish streaks and dots were still observable through the whole length of the body. The dorsal fin, reddish in color, originates above the eyes and runs the entire length of the fish reaching the caudal tip. Beginning of this fin is transformed in the occipital crest which, according to Hulley and Rau (1969), consists of 12 elongated rays. However, since our specimen was quite severed in



Figure 1. - Locations of occurrences of *R. glesne* in the Adriatic Sea (●). 1: near Rimini in 1932; 2: near Stobrec in 2009.

the head area, only few of these were preserved. Both pelvic fins, represented by a prolonged, ribbon like ray, were incomplete. Caudal rays were not observed and the tail terminated in a fine point. This corroborates the opinion of some authors that caudal rays are present only in juvenile specimens (Hulley and Rau, 1969). Upon dissection, digestive tract was examined for traces of food remains, but all of the contents, except some small unidentified fish bones, were already digested and therefore unrecognizable. Almost one third of the anterior part of the digestive tract was connected to extraordinary pyloric caeca, which contained a large number (thousands) of appendages. The gonads were inconspicuous and we were unable to determine sex of the fish. No parasites were observed inside or outside the body.

The first record of *R. glesne* in the Adriatic Sea was reported by Padovani (1933). This record considered a specimen found on 25 August 1932 near Rimini (Italian coast, Porto Riccione). Unlike our specimen, this one was found dead and badly mutilated floating at the surface. Only anterior part of the fish was found while the caudal part was missing. According to Padovani (1933), preserved part of the fish measured 150 cm and contained mature female gonads, which were red in colour and were one metre long. The interesting fact is that the fisherman, because of the rapid decay of the fish, made a mould out of it to preserve its outer morphology. Padovani (1933) based his observations on this mould without seeing the actual specimen. He did not provide a drawing or photo of the specimen. Additionally, later authors expressed doubts whether this specimen was drifted to Adriatic with sea currents rather than by means of active movement (Šoljan, 1948; Morović, 1973). In any case, our record proves that this fish occasionally visits the

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Figure 2. - Specimen of *R. glesne* (IOR-321). The fish is not complete; the middle part of 44 cm is missing.

Adriatic and this finding represents first record of this species in the eastern Adriatic Sea.

It is unclear what are the reasons for occasional strandings and death of the oarfish but according to Schmitter-Soto (2008), there are several possible reasons for this such as shark attacks, red tide, confluence of marine currents, earthquakes, etc.

Although the oarfish is considered very rare in the Mediterranean (Tortonese, 1970), in some of its areas it can be found more frequently. This is specially the case with Liguro-Provençal waters where the strandings of the oarfish are quite common (Psomadakis, 2008). The upwelling phenomenon that occurs in this area sustains a large number of zooplanktonic organisms, which serve as a food for a large number of zooplanktivorous species such as *R. glesne*. A review of findings of the oarfish from this area with morphometric details from 9 preserved specimens are presented in the paper by Psomadakis *et al.* (2008).

Strong upsloping currents during high tide periods are the main reason for occasional strandings of mesopelagic and bathypelagic fishes in the Strait of Messina where *R. glesne* has also been found in a few occasions (Cavallaro and Cavaliere, 1980). Additionally, three juvenile specimens measuring 252, 249 and 150 mm were found in the strait on 2 December 1974 (Berdar *et al.*, 1977). Findings of juveniles and eggs of this species suggest that this species reproduces in the Mediterranean waters and open a question whether a self-sustaining population is present (Psomadakis *et al.*, 2008).

Beside one specimen caught in November 2003 in Arenzano near Genova, which was reported by Psomadakis *et al.* (2008), we were able to locate only two other oarfishes that were recorded in the Mediterranean in the last ten years. These two individuals measuring 3.5 and 4.0 m, were observed on 4 July 2002 in the port of inlet Morgiou located between Marseille and Cassis (Quéro *et al.*, 2003). They were not caught, but only observed swimming near the coast.

Owing to its extraordinary appearance and obscure ecology and biology, findings of *R. glesne* have always been interesting to ichthyologists and numerous records are based on single or just few specimens. Because of rarity of the oarfish, those reports present an essential data source, which helps deciphering way of life of this elusive species.

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## REFERENCES

- BAUCHOT M.-L., 1987. - Poissons osseux. In: Fiches FAO d'Identification pour les Besoins de la Pêche. (rev. 1). Méditerranée et Mer Noire. Zone de Pêche 37. Vol. II (Fischer W., Bauchot M.-L. & Schneider M., eds), pp. 891-1421. Rome: Commission des communautés européennes & FAO.
- BERDAR A., GUGLIELMO L. & GIACOBBE S., 1977. - Ritrovamento di tre giovani esemplari di *Regalecus glesne* Ascanius, 1772 spiaggiati ad Oliveri (Messina). *Atti Soc. Pel. Sci. Fis. Mat. Nat.*, 21: 124-139.
- CAVALLARO C. & CAVALIERE A., 1980. - Spiaggiamento di *Regalecus glesne* Ascanius (Pisces: Regalecidae) nello stretto di Messina. *Mem. Biol. Mar. Ocean.*, 10(5): 135-137.
- HULLEY P.A. & RAU R., 1969. - A female *Regalecus glesne* from Cape Province, South Africa. *Copeia*, 1969(4): 835-839.
- MOROVIĆ D., 1973. - Rare fishes of the Adriatic Sea. *Pom. Zbornik, Rijeka*, 11: 590-610.
- PADOVANI C., 1933. - Prima cattura di *Regalecus gladius* (Walb.) nel mare Adriatico. *Boll. Pesca, Pisc. Idrobiol.*, 11(1): 102-107.
- PSOMADAKIS P.N., BOTTARO M., DORIA G., GARIBALDI F., GIUSTINO S. & VACCHI M., 2008. - Notes on the *Regalecus glesne* occurring in the Gulf of Genova and in Liguro-Provençal waters (NW Mediterranean) (Pisces, Lampridiformes, Regalecidae). *Ann. Mus. Civ. St. Nat. "G. Doria"*, 99: 549-571.
- QUÉRO J.-C., SPITZ J. & VAYNE J.J., 2003. - Observations ichtyologiques effectuées en 2002. *Ann. Soc. Sci. Nat. Charente-Mar.*, 9(3): 275-279.
- SCHMITTER-SOTO J.J., 2008. - The Oarfish, *Regalecus glesne* (Teleostei: Regalecidae), in the Western Caribbean. *Caribb. J. Sci.*, 44(1): 125-128.
- ŠOLJAN T., 1948. - Fishes of the Adriatic Sea. 437 p. Split, Croatia: Institute of the Oceanography and Fisheries.
- TORTONESE E., 1970. - Osteichthyes (Pesci Ossei). Parte Prima: Fauna d'Italia, Vol. X. 565 p. Bologna: Calderini.

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